MISSOURI BOTANICAL GARDEN
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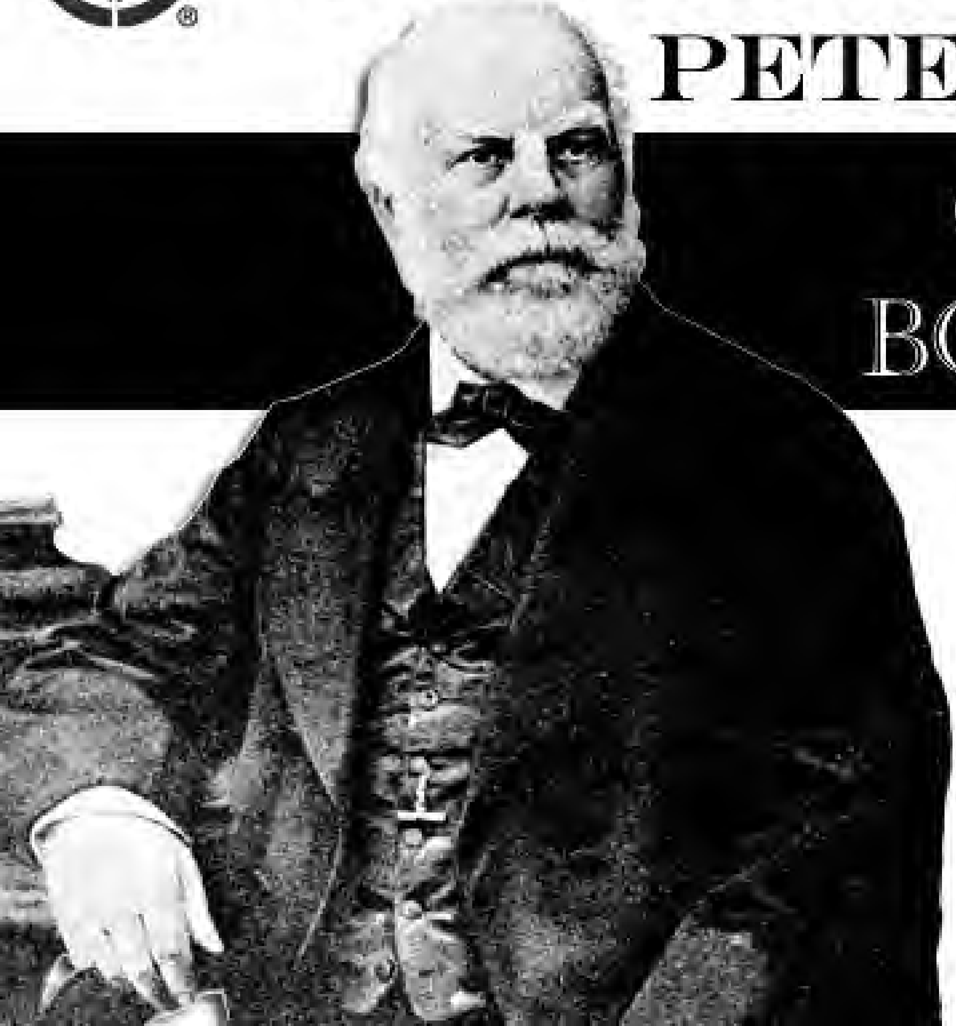

GEORGE ENGELMANN BOTANICAL NOTEBOOKS

Pagination Note:
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Recd Nov 17th
Ans Nov 23.

Davenport Nov 13th 1862

My Dear Dr.

I have been busy since receiving yours of Nov 7 & 8th packing seeds & specimens for Dr Gray - just sent off.

I recognize but *one* species of Abies certainly well marked as a *tree* (though as you find it difficult to fix specific characters) in *A. Engel.* What distinguishes it from A. Menz. is the *reddish shaggy* bark soft *white* wood even *columnar* trunk with *smaller* branches, (therefore *less* knotty) sharper outline (sometimes quite steeple shaped) leaves generally slenderer mostly obtuse; in the fresh state not so stiff as ~~t~~ *A Menz.* cones more inclined to the horizontal position more alpine in its range, (from 8000 to 12000 ft.) Cones very variable those on *large trees* & in alpine *situations* *longer* with notched margins. — On small trees lower down

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shorter with more rounded scales, & less copious in fruit & seed. My seed specimens including the branch sent you were got near the limit of trees. associated with P. aristata. I think the difference of situation will account for most of the variations in the leaf & cone.

// In A Menziesii the bark is grayish not scaley: wood very tough knotty & resinous Cones always directly pendulous old cones of a light brown, younger ones paler leaves always stiff when fresh. & when dry often sharp & stiff enough to pierce through a thin leather shoe the tree commences to bear fruit when quite young at a height of 12 to 15 ft. the young shoots are of a silvery lustre - some large trees, of oval shape & dense foliage make magnificent specimens of forest growth; it is quite rapid growth. on a trunk a foot in diameter

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I counted but 36 annual rings
Its favorite location is on the
borders of streams, ranging
from 7000 to 9000 ft. As a tree
it shows no disposition to vary
but maintains its peculiarities
wherever met with. Its long
cones always conspicuous, often
densely crowded near the summit
the new cones mixed with the
old ones till near maturity of
the former

Do you find no difference in
the seed, wing &c?

In reading over Newberrys account
of A Williamsonii it seems in many
accounts to agree with our species
particularly in its alpine habit
but he does not give a very
full account of the tree, his
figure would answer for ours.
I did not notice the peculiarity of
the old cones with everted scales
but that may be accidental

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I sent you 3 No. Pl. Parry No 1
I have sent the bulk of my seeds to Dr Gray but a few still left. What does Shaw want?
I have good seed of Abies Douglasii & A Menziesii. also A. Engel[illegible]
He ought to have A Menziesii growing as it would probably suit the climate there & grow rapidly.

Hall continues to annoy me with his stupid comico-philosophical letters. he holds on to the collection apparently with a view to bring me to terms. Has he yet sent you your set? I wrote to him to send on mine according to agreement & offering exchange for new ones, his answer is a long dissertation on something else. Shall I take Genl Scotts advise and say "Erring sister depart in peace"

Yours &c

C C Parry.

March 1863 2 Dr Parry

Abies Engelmanni.

Tree variable in size & shape according to altitude in some localities (mostly at the lower, or moderately high elevations) showing a remarkably narrow spire shape; in other places round topped, profusely branched. and in alpine situations prostrate!! Foliage dark colored. young branches never showing the light color smooth appearance of A. Menz. — Trunk with dark brown or redish scaly bark smooth & thin. never over 1/8 inch thick The trunk tapers quite gradually. and (the lower branches being small twigs) furnishes good saw logs — very even growth. (see your specimen wood. from tree 50 ft high diameter at base 8 inches No rings 73. — (Larger specimen height 76 ft. No rings 98. circumference of trunk at base 4 ft 3 inch) diam 16 inches (wood see specimens)

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A Engelmanni concluded

leaves variable in length often slender. never stiff spinescent.

You have the character of the cones at different stages of growth they are much less profuse and more scattered than in the massed growth of A Menziesii young trees and alpine forms rarely produce fruit;

I do not wonder that you judging from picked specimens and noticing the variations in foliage & cones of A. Eng. should hesitate whether it might not run into A Menziesii but that any one seeing the trees themselves, often growing side by side should confound them together, seems to me preposterous, but the fact is Hall paid very little attention to trees (as his specimens show) & never before was in a pine region so his opinion is of no value

In my set of his plants there is only a half grown sp of A Menziesii with split cones! size 2/3 of A ~~Menz.~~ Engel

no time to write more at present
I see by papers that Genl Case is
removed from office and a sub
put in his place, dont know any reason
unless that he once worked on a R R in
Alabama !! His therm is all. the
detatched broken, trying to unite the
column of mercury. I have lately a
letter from Green giving directions about
uniting the column of mercury will copy
& send you Dont know what Case
will do I must write to him

In haste yours
C. C. Parry

Dr Parry's   Letter May 4th 1863

Something more about Abies Engel

Measurements from note book

Specimen	Diameter of trunk 1 ft above ground	No. rings	Heigth	Thickness of bark
No 1	8 inches }	73 }	50 ft }	1/8 inch
" 2d	Circumference 4 ft 3 inch	98 }	76	"
" 3d	3 ft 6 }	82 }	60 }	"

All these from Clear Cr bottoms above Empire city. No 1. is the tree from which wood sections were procured

(No 3 diameter 30 ft up 8 inches
No. of rings 41)

The long leaf specimens with sessile cones was from the same locality but a young bearing tree about 4 inches diameter 25 ft high — ? May not the peculiarity of the cones & leaves be due to its young growth, rather than altitude ?! I noticed but little difference in the general aspect of the

tree at different elevations
Some of the largest specimens
were high up towards the
timber line — my seed cones
& specimen with leaves adhering
were from near the timber
line 10,000 ft + there the cones were
much more abundant and later
than on Clear Cr when collected
Sept 30th the cones on Clear Cr
had dropped their seeds —

Abies grandis from
bottoms Clear Cr above Empire City
Diameter 12 inch. No Rings 65 height
55 ft bark (smooth) 1/4 inch. very
strict, abundant blisters on the trunk
full of balsam — wood soft. decaying
before the bark

Abies Douglasii
near Lindstrom's Mill
Circumference at base ~~5 ft 7 inch. No rings 127~~ 2 ft 11 inches
~~height~~ No rings 113. height 42 ft bark thick
(a small tree)

Rec^d March 19 1863

Dr Parry.

Davenport March 17th 1863

Now is A. Dougl. called Hemlock S.
— — A Engl

My Dear Dr

Yours of 12th recd—

We have so often discussed the differences between Abies Engelmanni & A Menziesii that I can think of nothing new to offer. but give you in Synopsis the differences of habit

A. Menziesii, General aspect of the tree very constant (not inclined to vary) foliage light colored in young specimens silvery small branches very light colored (brownish) very plainly marked by prominent leaf scars trunk grayish bark moderatly rough not scaley, in old specimens ½ inch thick trunk tapering rapidly. branching low down. branches very strictly horizontal giving a long ovate shape. with an abrupt sharp point very rapid growth (specimen 82 ft high. Circumference diameter 21 inches at base 5 ft 7 inch No annual rings 82.) wood harsh grained brittle, very knotty (called white hemlock)

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A. Meny continued.

leaves generally short always spinescent; young cones., scales membranaceous glistening, pale with a slight pale redish tinge mature cones. whitish turning to light brown not varying much in size or shape, persistent. till the maturing of the succeeding seasons cones very profusely massed together near the top of the tree, The cones are found on quite young specimens 10 to 15 ft high. most profuse in young trees 6 inch diameter 25 ft high The scales of cones are invariably tapering (never rounded) with an obtuse crenulate truncate or notched tip. These are all the prominent outside characters I think of. the tree grows mostly in low moist soil on margins of streams or marshy places. usual range 7000 and 9000 ft never alpine —

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"White Spruce" of Colorado (Dr Parry)

Picea Engelmanni: my Herb. April. 1863.

Dr Parry's specimens from Colorado all with pubescent branches, leaves all stout subacute or acute

with male fl. fol. 7–9'''
fem fl 7–9'''
" 6–10'''
" 6–8
alpine fruit specim 6–9 21–26
Empire City fruit specim. 7–12 Cones 19–24''' × 8'''
alpine fruit with bark 5–8 very broad 19–21 × 9'''
alpine old fruit 6–8 cones 20'''–23''' $\frac{8}{13}$

bark of a tree 8" diam. 1 line thick
12" — 1½ — — Parry says $\frac{1}{8}$ inch =
wood – diff. specimens, layers $\frac{1}{4}$ – 1¼ line thick — the latter in young stems
average $\frac{2}{3}$ line in the 8 inch stem, makes it 80 years old
average of 12 inch stem probably about $\frac{3}{5}$ — 120 years
Parry letter: March 1863 : trunk. 8 inch diam. 73 years old, 50 feet high — annual rings $\frac{2}{3}$ line wide
— 16 — — 98 — — 76 — — — — 1 line —
both from Clear Creek
Hayden Groventres Fork fol. 6–9'''
Fendler 833 " 10–14''' gracil. s. an albid.
Fremont 212 1845 " 9–11½ 4
both see next page

ram. glabr. s. glabriuscul. fol. acut. s. acutissim. brev. gracillim ; all young branches!
Hayd. Bighorn. Aug. 5–7 acutissim
" " " 6–11 acutis
" Longue Rive. 5–6 acutissimis
Haydens fruits : Head of Columbia July. 24''' × 8'''
Summit of Wind River Mts. 20–26 tree 80–120'
Big Horn Mts Jun Sept 10,000 20'''–22 × 9'''
Laramie Mts Aug 20'''–22'''

Leaves 6–10 lines, in the long form 9–14''' in the doubtful glabrous from Big Horn. 5–10'''
Cones 1½–2¼ inch long 19–26''' — usually less than 2 inches — ¾ inch or less 8–9''' in diam. when closed
Diameter

12423

Specimen from Clear Creek bottom — measured 1 foot above ground.

~~8 inches diameter~~

3' 6" ~~circumfer.~~ = $13\frac{1}{3}$" diam. 82 years old. 60' high
bark 1/8 inch thick — average annual rings therefore
not quite 1 line

same tree 30 feet from ground. 8 inches diameter
with 41 rings.

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Engelmanni Parry
nigra fide Gray

Nov 1861

Abies alba fide Parry

by no means rare in the Rocky Mountains composing almost the entire forest growth on the Mountain slopes of Middle Park, head of Grand River; Magnificent forests

It is a magnificent tree, with a very even columnar trunk below, tapering upwards into a slender spire; Bark scaly smooth brownish-red and quite thin; wood remarkably white; soft preferred to Pinus ponderosa for inside work being more easily worked free from ~~knots~~ and less resinous.

I think I must have seen it 2–2½ feet diameter and 80– over 100 feet high. It grows rapidly as shown by the annual rings. It can be distinguished from A. Menziesii as far as it can be seen. see Parry's letter of Dec 19 1861

"Bark full of tannin!

" foliage decidedly dark, though not strikingly so — branches forming an acute angle with the trunk; in many places the tree forms a regular steeple top.

Bark pealing off in irregular shaped shreds of a purplish brown colour, quite different from the rough brown bark of "A. alba" [nigra, of Wisconsin]

Jan 28 1862: in habit & character distinct from the eastern A. nigra. tapering even trunk, scaly reddish bark, white wood common at Tarryall with A grandis — while at Fountain qui bouil they are wanting & A. Menziesii & Douglasii are common

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Picea pungens

Abies Menziesii "Spruce" the Comm. name at Pike's Peak (Parry)

" a fine shaped, often magnificent tree, rather stiff in outline; bark light brownish, growth rapid. wood very compact and pitchy, coarse grained; logs tapering too rapidly to saw up to advantage.

Parry 1861

At Fountain qui bouille together with A. Douglasii the monarch of the forest (Parry Jan 28 1862)

Male Aments 9–10 and even 12 l. long ovate-cylindric – short stipitate

Cones 3 – 4½" l. long

See also Parry's letter Nov 13 1862, among papers belonging to A. Engelmann

" " March 1863 about height etc

trunk 21 inches diam. 82 years old, 82 feet high, average width of rings 1½ lines

" 12 " " 36 " " " " " 2½ "

7000–9000 feet high – – wet places and borders of streams

bearing fruit very young 12–15'

fruit persistent a second year. and then reddish brown

A trunk measured (Parry 1862) 2 feet above ground. 5' 17" circumference

127 rings ~~(5' 17" = 77" each ring $\frac{77}{2}$ / 127)~~ = | 5' 17" – ~~1" = 76"~~ = 77"

height 82 feet. – bark ½ inch thick – | diameter ~~24½~~" and

without bark 23½ inch = 282 ~~lines~~ diam. ~~23½~~

$\frac{282}{2}$ = 141 radius. $\frac{141}{127}$ = 1‴1 width of each ring

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6 Abies Menziesii. A common tree but not abundant or exclusive in its localities - flourishes best near the margins of streams and moist swampy places. of a very stiff outline with branches diverging at various acute angles with the main trunk, upper branches abundantly clothed with the long drooping cones. In certain favorable localities it forms a magnificent tree with dense foliage reaching nearly to the ground, thence shooting up a graceful spire 50 to 80 ft. Trunk tapering. bark grayish brown. moderately thick. wood very resinous, very tough whitish, not much prized by saw-mill men

C Parry Dec. 1861

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growth, in the lower elevations associated with *P. contorta*, higher up approaches the alpine district where it is scatteringly associated with *P. aristata*, which finally composes the entire growth.

3 *Pinus contorta*. Dry elevated ridges constituting the main part of the forest extending down sparingly into the dry upper valleys. in the latter situations it is more bushy and forms a symmetrical tree 30 to 40 ft high 12 inch diameter persistent cones. The wood *tough* *elastic* not very resinous bark smooth of a grayish color. thin and scaling off in thin small flakes. used for small logs and for making shingles. rarely cut into boards. a rapid grower

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Dr Parry Nov 1861

7. Abies (alba?). Met with quite abundantly along the head waters of streams on both sides of the snowy range. Most abundant and of magnificent dimensions in the basin of Middle Park where it constitutes almost the entire forest growth Of a strict pyramidal outline, easily distinguished at a distance by its steeple-shaped, prolonged top; upper branches forming quite an acute angle with the main stem, short and stiff cones not very abundant. Trunk evenly rounded with a thin scaley, redish brown bark. Much valued for lumber. wood soft, white used for inside work. Trunk often 2½ ft diameter at base; height 50 to 100 ft This tree often occurs in high alpine localities where exposed to the wind it looses its steeple top & spreads over the ground forming a dense mat of foliage

12427

I have little to say about Cactaceae. — The only ones noticed were Cereus viridiflorus. Mamillaria vivipara. M. Nuttallii. all well known

Cuscuta. only one species met with.

Euphorb. scarce & not of special interest.

humilis

Gentianaceae. — 135 Gentiana Fremontii. ? This was met with only at one locality. along the moist grassy margins of Upper Clear Cr. associated with Polygonum viviparum. almost hidden among the grass. Its stems succulent fragile of a bleached color. flowers of a greenish white. the distinct projecting capsules just drew my attention. I think you must be right in not referring it to 306. which never shows this peculiarity or agrees in habit and general appearance

306 G. prostrata ? var. ~~[illegible]~~ nana Flowers hardly conspicuous of a pale blue. plant mostly immersed in the matted foliage of Silene acaulis ; scattering mixed with 309. This latter I thought might be a reduced form of G. acuta. which it resembles in every thing but

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A. Menziesii bracts ~~pubescent~~ glabrous shining.
leaves stout, awlshaped, spinescent.
scales of fem. ament. membranous? (pale)
Cones terminal, cylindric (large)
scales elongated, truncate or notched, crenate. (pale)

A. Engelmanni bracts pubescent
leaves stout, acuminate,
scales of fem. ament. fleshy (red)
Cones lateral or terminal, ~~oblong~~ cylindric oblong
scales shorter, truncate or rounded, crenate (smaller) (reddish)

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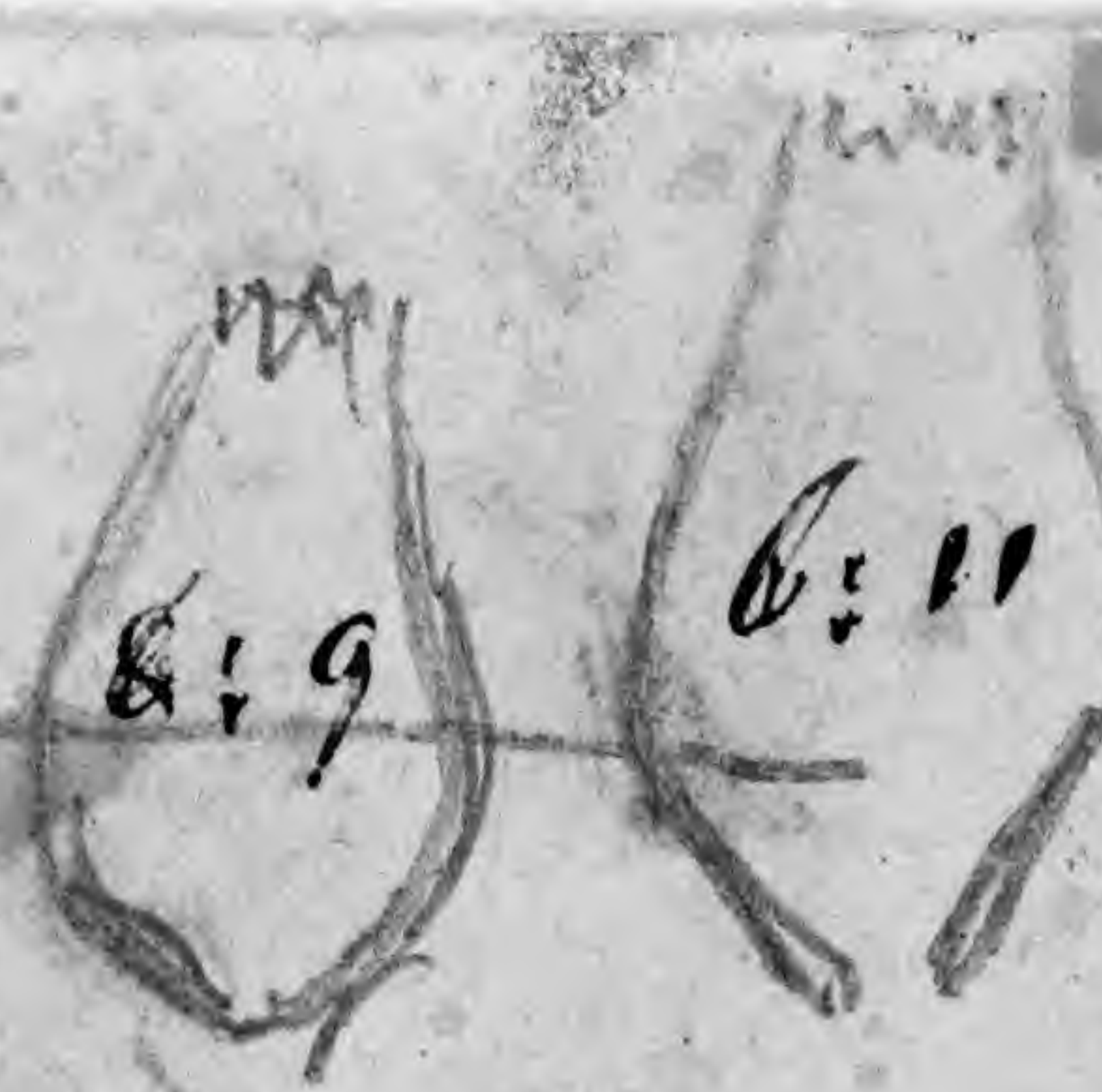
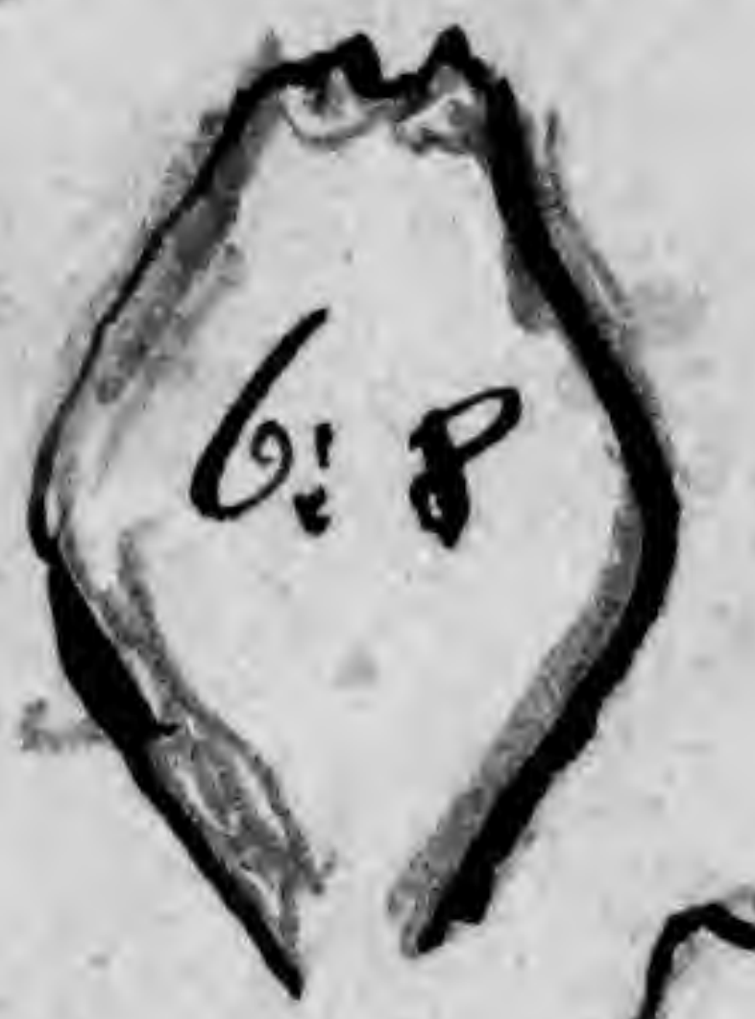
A. Menziesii

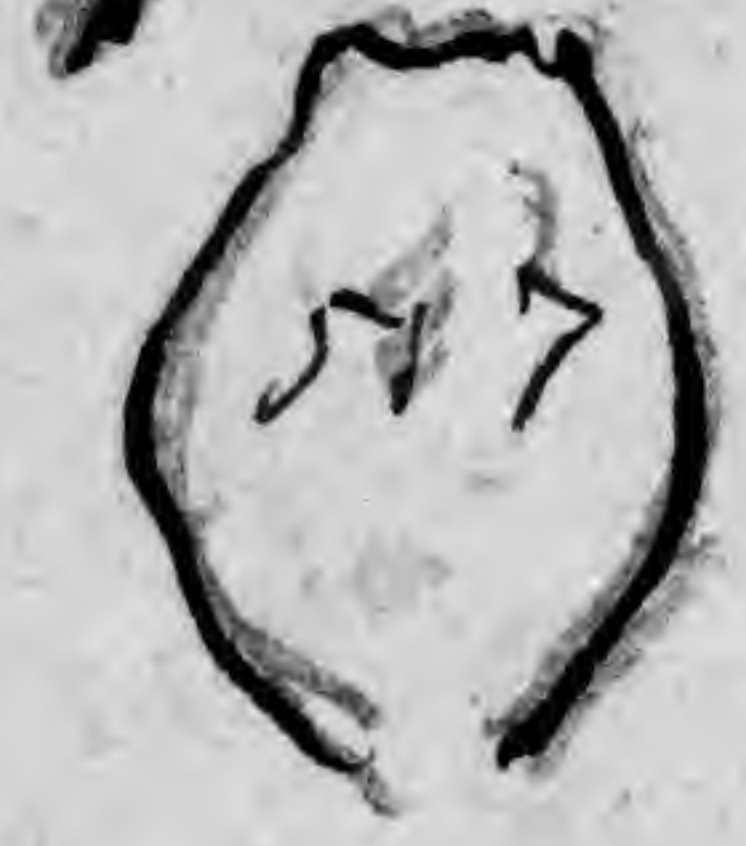


Abies Engelmanni

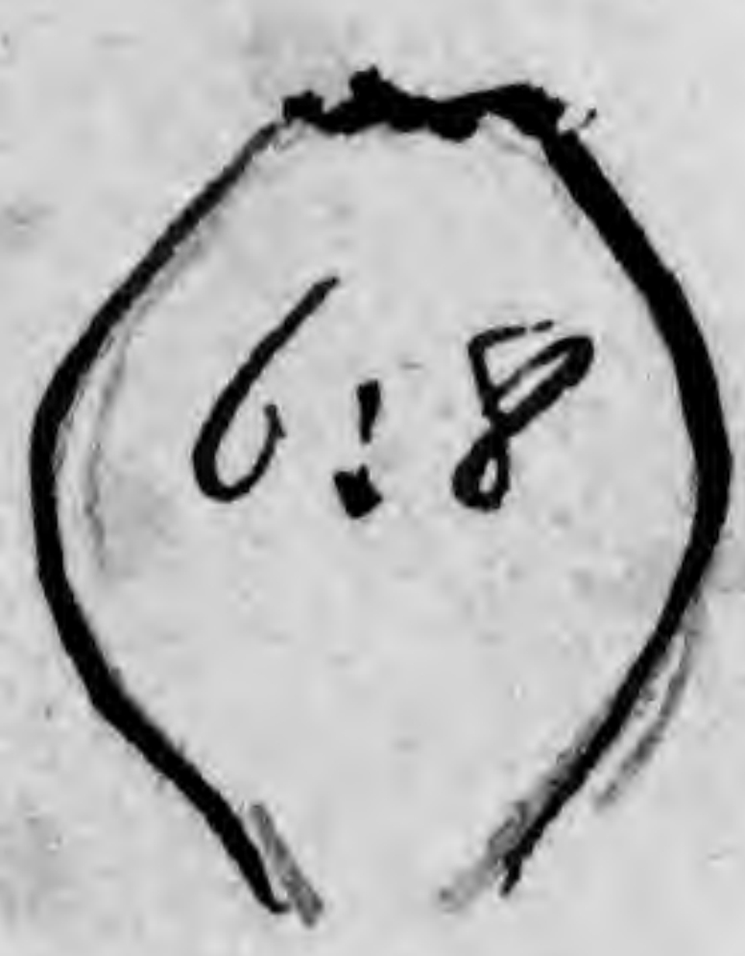
1. Spec. with bark
(fresh cone figure)



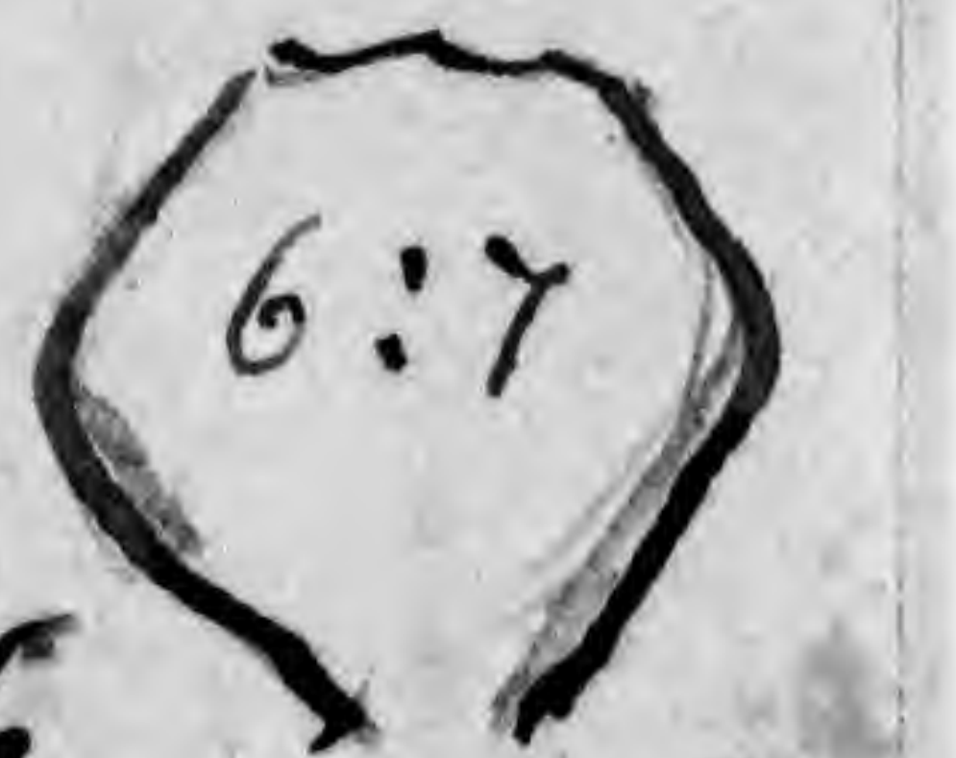
2, Parry June 14
(old Cone)



3, Hayden, Wind River
Mounts



4 Parry, spec.
from Empire City
Big Horn



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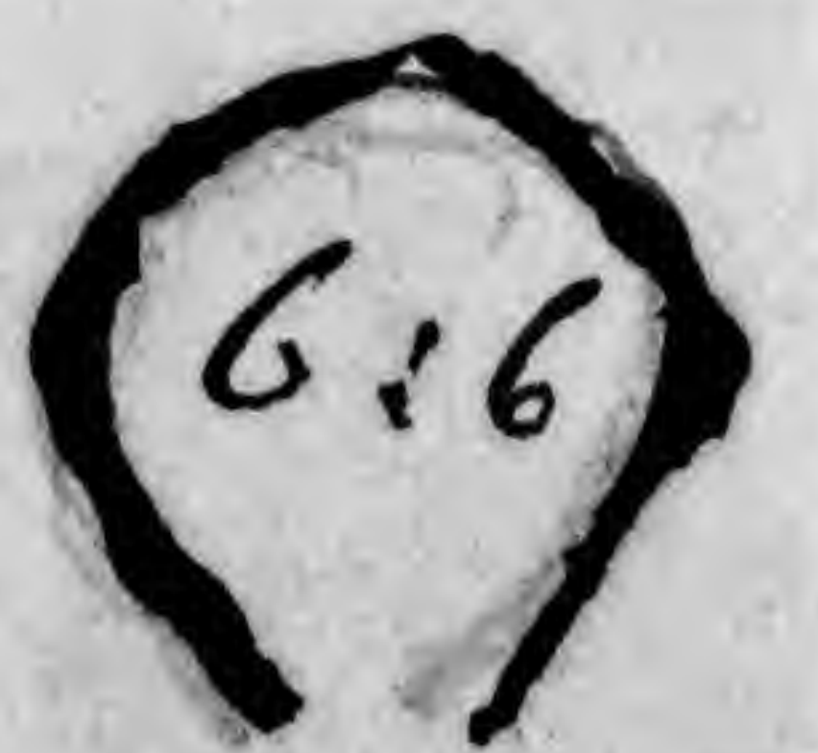
5. Hayden Head of
Columbia



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